REMARKS/ARGUMENTS

Claims 22-26 and 31-34 remain in this application. Claims 1-21 and 27-28 are being canceled without prejudice as being drawn to non-elected inventions. Claims 29 -30 are being replaced by new claims 31-34 to more particularly define the invention.

Pages 10 and 13 of the specification have been amended to verbally restate process conditions unambiguously disclosed in Figs. 10 and 11 of the drawings of the application as originally filed. Hence those amendments do not constitute new matter.

Reconsideration of this application in view of the foregoing amendments and the following remarks is respectfully requested.

Claims 29-30 were rejected under 35 U.S.C. §112, second paragraph, on the ground of inadequate support in the specification for lines 13-15 of claim 29 referring to the feature of independently controlling the ratio of gas flow to liquid flow through the honeycomb channels. Analogous limitations are presented in claims 31-34.

As support for those limitations as now presented in rewritten claims 31-34, the Applicants cite the following portions of the specification:

At page 9, lines 19-22:

> "However, still further advantages in process control and reactor performance for three-phase reactions are achieved through the use of special reactor configurations that include provisions for independent gas and liquid flow control. Examples of such reactors are schematically illustrated in Figs. 8 and 9 of the drawings."

and further beginning at page 10, line 26 and continuing over to page 11, line 3:

> "Evident from a study of Fig. 10 are the wider ranges of liquid and gas linear velocity observed within the reactor, these being the result of the new degree of freedom available through the application of the additional mechanical liquid driving force. This added force permits reactor operation over a much wider range of variation in the ratio of gas to liquid flow in the monolith. For example, high liquid flow velocities can be achieved at zero or low gas flow velocities, an operating mode that substantially increases the recirculation number for the reactor. This brings conditions within the reactor closer to those of an ideally mixed system. Another significant advantage of the higher recirculation number is an increase in the heat exchange efficiency of the reactor, where such is useful for process control." (emphasis added).

and further beginning at page 12, line 30 and continuing over to page 13, line 5:

> "At the fixed gas feed rate of 1000 m^3/hr plotted on Curve C, the power input through the mechanical agitator yields the same increase in mass transfer as if more gas was added. Thus over the overlapping ranges of reactor input power level, the gas:liquid ratio within the catalyst bed may be arbitrarily adjusted to best meet the requirements of any selected chemical process. Curve D indicates that, at gas feed rates above 1000 m^3/hr, additional mechanical agitation increases the mass transfer coefficient of

the reactor to values well above those achievable through bubble agitation alone." (emphasis added).

In view of this disclosure, the Applicant respectfully submits that the features of independent control over gas and liquid flow, and the resulting ability to adjust the gas:liquid ratio within the channels of the catalyst bed, have been unambiguously disclosed. Accordingly, reconsideration and withdrawal of the rejection of claims 29-30 under 35 U.S.C. §112 are respectfully requested.

The Examiner next rejected claims 22-24, 26 and 29-30 under 35 U.S.C. §103(a) as unpatentable over Ohta, U.S. Patent No 6,086,832, taken with Lange et al., U.S. Patent No. 6,087,455. Ohta was cited to show the recirculation of a flow of reactant past a catalyst in a tank reactor, but clearly omitted any suggestion to utilize a honeycomb catalyst. Lange was cited to show the use of a honeycomb catalyst to produce a chemical product.

Ohta discloses a laboratory reactor designed to evaluate the performance (intrinsic catalytic activity) of solid catalysts for liquid or gas/liquid reactions. Honeycomb catalysts are neither disclosed nor suggested. The Ohta device is designed to address various problems of prior art measuring apparati such as tubular reactors, Berty reactors, and spinning basket reactors that poorly distribute the reactants and/or poisons over the catalyst, do not provide means for catalyst or reactor temperature measurement or control, do not insure adequate gas-liquid mass transfer, do not permit accurate determinations of gas and liquid flow rates, and/or suffer from various mechanical problems. Thus Ohta discloses apparatus and a method for evaluating a solid catalyst over a range of operating conditions on a laboratory scale (column 4, lines 33-39 of the patent).

There is nothing in Ohta to suggest using the disclosed testing apparatus for conducting catalyzed chemical reactions on an industrial scale, whether employing the disclosed pelletized catalysts or any other catalyst designs such as honeycombs. As disclosed in the Declaration of Dr. Thorsten Boger, already of record in this case, honeycomb catalysts provide liquid and gas/liquid flow characteristics offering substantial and unexpected performance advantages over pelletized catalysts in large stirred tank reactors.

Nothing in Ohta can be taken to even remotely suggest the advantages documented in Dr. Boger's declaration. In particular, there is nothing in either of Ohta or Lange to suggest the significant improvements in reactor efficiency resulting from the high mass transfer coefficients achieveable at relatively low power inputs in the Applicant's process (claim 22 of the application).

In rejecting Applicant's claims the Examiner has cited the disclosure by Lange of the use of a monolithic catalyst to hydrotreat high molecular weight polymers, and has concluded that the use of the Lange catalyst in the Ohta apparatus would constitute a mere change in the shape of a component. However, Lange employs only foam catalysts in his treatment processes, and suggests, at best, equivalent performance for honeycombs. As the Declaration of Dr. Boger clearly establishes, foam catalysts are far inferior to honeycomb catalysts in the Applicant's process, since they do not provide the high liquid throughputs necessary to achieve the high mass transfer efficiencies required for economic stirred tank reactor operation. Certainly this finding and the substantial advantages for process efficiency

resulting from the "change in shape" noted by the Examiner, are not suggested by either of Lange or Ohta.

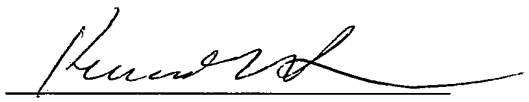
Finally, the Examiner has discounted the Declaration of Dr. Boger as a mere matter of calculation done by the Applicant. The Applicant points out that the calculations presented are in most cases not Dr. Boger's calculations but instead art-recognized results from well established literature sources. Beyond that, the substantive issue is whether the data presented establishes results not taught or suggested by the cited references, and the Applicant respectfully urges that none of Dr. Boger's findings relating to the criticality of catalyst shape to economic stirred tank processing are even remotely suggested by either of the cited references.

In conclusion, the Applicant finds no teaching, in either of the references alone or in the combination of references relied upon, to suggest either the methods of the present invention or the significance of catalyst design on the economies and efficiencies of stirred tank reactor chemical processing. Accordingly, reconsideration and withdrawal of the rejection of Applicant's claims under 35 U.S.C. §103 on reference to Ohta and Lange are respectfully requested.

In light of the foregoing amendments and remarks, the Applicants respectfully submit that the remaining claims of this application are now in condition for allowance. Accordingly favorable reconsideration of this application and the issuance of a Notice of Allowance herein are courteously solicited.

Applicants believe that no extension of time is necessary to make this Reply timely, but contingently request that the Office grant such time extension pursuant to 37 C.F.R. § 1.136(a) as is necessary to make this Reply timely, if in fact such an extension is required. In that contingency the Office is hereby authorized to charge any necessary extension fee or surcharge to the deposit account of Corning Incorporated, Deposit Account 03-3325.

Respectfully submitted,



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